In the Claims :

1. An oscillator comprising: a resonant tunneling diode and passive elements forming a resonant circuit and a circuit to periodically bias the oscillator into and out-of a condition of oscillation.

2. The oscillator of Claim 1 wherein energy from a signal source is coupled into the oscillator circuitry for the purpose of controlling the average oscillation time.

3. The oscillator of Claim 2 wherein the signal source arrives from an antenna

4. The oscillator Claim 1 including a tapered slot line antenna and resonator coupled to said tunneling diode.

5. A microwave detector comprising: an oscillator using resonant tunneling diode at the center frequency of interest; a quench circuit coupled to said oscillator for periodically biasing said oscillator into and out of oscillation; an input circuit for applying an input signal to be detected and circuitry for detecting the startup time of the oscillator after it has been biased out of oscillation for determining the signal strength of the input signal.

6. The detector of claim 5 wherein said quench circuit is a quench generator.

7. The detector of Claim 6 wherein said input circuit is coupled to an antenna.

8. The detector of Claim 5 wherein said input circuit is coupled to an antenna.

9. The detector of Claim 6 wherein said quench generator operates at a lower frequency than said oscillator.

10. The detector of Claim 9 wherein said quench generator operates at a frequency less than 10 percent of the first mentioned oscillator frequency.

11. The detector of Claim 10 wherein said input circuit includes a tapered slot line antenna coupled to said tunneling diode.

12. A microwave detector comprising: an oscillator including a pair of resonant tunneling diode arranged in push-pull configuration at the center frequency of interest; a quench circuit coupled to said oscillator for periodically biasing said oscillator into and out of oscillation; an input circuit for applying an input signal to be detected and circuitry for detecting the startup time of the oscillator after it has been biased out of oscillation for determining the signal strength of the input signal.

13. The detector of Claim 12 wherein said input circuit is coupled to an antenna.

14. The detector of Claim 5 wherein said oscillator includes an inductor coupled to said resonant tunneling diode and a power meter coupled to the inductor for providing the output from the detector.

15. The detector of Claim 5 wherein output from said detector is measured by a free space power meter tuned to the detection frequency.

16. The detector of Claim 12 wherein said input circuit is coupled to an antenna.

17. The detector of Claim 12 wherein said oscillator includes an inductor coupled to said resonant tunneling diodes and a power meter coupled to the inductor for providing the output from the detector.

18. The detector of Claim 12 wherein output from said detector is measured by a free space power meter tuned to the detection frequency.

19. A method of detecting the strength of an input signal comprising the steps of: providing an oscillator using at least one resonant tunneling diode resonant at a center frequency of said input signal, and periodically shutting down and restarting the oscillator such that the duty cycle of the oscillator varies with the signal strength of the input signal.

20. The method of Claim 19 wherein said step of periodically shutting down and restarting said oscillator includes the step of providing energy from a signal source to said oscillator for the purpose of controlling the average oscillation time.

21. The method of Claim 20 wherein said step of periodically shutting down and restarting said oscillator includes a quench generator.

22. The method of Claim 21 wherein said quench generator operates at a lower frequency than said oscillator.

23. The method of Claim 22 wherein said quench generator operates at a frequency less than 10 percent of the oscillator frequency.

24. The method of Claim 20 wherein said signal source arrives from an antenna.